

ROLE OF THE GENERAL PRACTITIONER IN THE DELIVERY OF SURGICAL AND ANESTHESIA SERVICES IN RURAL WESTERN CANADA

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Abstract • Résumé

Objective: To determine the present role of general practitioners (GPs) in the delivery of surgical and anesthesia services in rural western Canada.

Design: Survey by mailed questionnaire in November 1993, with telephone follow-up of nonresponders.

Setting: Rural British Columbia, Alberta, the Yukon Territory and the Northwest Territories.

Participants: Administrators of 148 rural hospitals; of the 121 who completed it 101 represented hospitals that met the inclusion criteria (fewer than 51 beds and serving a population of 15 000 or less).

Outcome measures: Hospital characteristics, type of practitioners providing surgical and anesthesia services, length and location of GPs' surgical and anesthesia training, types of surgical procedures performed by GPs and opinions of administrators regarding the delivery of surgical services in their community.

Results: Surgical services were provided by 56 (55%) of the 101 hospitals; at 45 (80%) they were provided by GPs, and at 33 (59%) they were provided by GPs with limited additional surgical training. Fifteen (27%) of the 56 hospitals were said to rely solely on GPs with limited surgical training for surgical services. At 45 (80%) of the 56 hospitals anesthesia services were provided by GPs, all of whom had limited additional training in anesthesia; 36 (64%) were said to rely solely on GPs for anesthesia services. Just over three quarters (76% [74/98]) of the administrators felt that their community's surgical needs were well met.

Conclusion: GPs with limited specialty training continue to play a role in providing surgical and anesthesia services in rural western Canada. This has implications for postgraduate training programs in Canada.

Objectif : Définir le rôle que jouent actuellement les omnipraticiens (OP) dans la prestation des services de chirurgie et d'anesthésie dans des régions rurales de l'Ouest du Canada.

Conception : Enquête par questionnaire posté en novembre 1993 et suivi téléphonique auprès des non-répondants.

Contexte : Régions rurales de la Colombie-Britannique et de l'Alberta, le territoire du Yukon et les Territoires du Nord-Ouest.

Participants : Administrateurs de 148 hôpitaux ruraux. Sur les 121 qui ont rempli le questionnaire, 101 représentaient des hôpitaux répondant aux critères d'inclusion (moins de 51 lits et desservant une population de 15 000 personnes ou moins).

Mesures des résultats : Caractéristiques de l'hôpital, type de praticiens fournissant des services de chirurgie et d'anesthésie, durée et lieu de la formation en chirurgie et en anesthésie reçue par les OP, types d'interventions chirurgicales exécutées par les OP et opinions des administrateurs sur la prestation des services de chirurgie dans leur communauté.

Résultats : Sur les 101 hôpitaux, 56 (55 %) fournissaient des services de chirurgie. Ces services étaient fournis par des OP dans 45 cas (80 %) et par des OP qui avaient reçu une formation supplémentaire limitée en chirurgie dans 33 cas (59 %). On a affirmé que 15 (27 %) des 56 hôpitaux comptaient uniquement sur des OP possédant une formation limitée en chirurgie pour leurs services de chirurgie. Dans 45 (80 %) des 56 hôpitaux, les services d'anesthésie étaient fournis par des OP qui avaient reçu

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une formation supplémentaire limitée en anesthésie. On a affirmé que 36 (64 %) comptaient uniquement sur des OP pour leur services d'anesthésie. Un peu plus des trois quarts (76 % [74/98]) des administrateurs étaient d'avis que les besoins chirurgicaux de leur communauté étaient bien desservis.

Conclusion : Les OP qui ont reçu une formation limitée dans des spécialités continuent de jouer un rôle dans la prestation de services de chirurgie et d'anesthésie dans les régions rurales de l'Ouest du Canada. Cette situation a des répercussions sur les programmes de formation postdoctorale au Canada.

The delivery of medical services in rural areas is still a challenging health policy issue.¹ Despite the fact that about 24% of Canadians live in rural areas, only 17% of general practitioners (GPs) and 4% of specialists practise in these areas.² Canada's western rural population is found primarily in smaller communities dispersed over an extremely large area. The geography and potential for inclement weather create situations in which urgent transfer of patients becomes difficult, if not impossible. These problems are exemplified by the typical small town in British Columbia nestled in a valley between two mountain ranges that is 250 km from the nearest referral hospital. In this setting the provision of routine obstetric care depends on whether emergency cesarean section can be performed. One might argue that every other surgical emergency could be better handled by transferring the patient to a regional or tertiary care centre. However, this notion creates practical, if not ideologic problems. Should every patient with suspected appendicitis be transferred 250 km for a surgical assessment? Should a patient have to travel this distance to receive care for a simple ischiorectal abscess? In this era of rationalizing health care these are important issues to address.

To date, there have been few studies to determine the characteristics and quality of surgical care provided outside of urban settings. The debate regarding surgical services in rural areas has turned on strong rhetoric and the assumption that such services should be provided only by board-certified surgeons.^{3,4} However, it is becoming apparent that the tertiary care model is untenable in rural Canada⁵ and that there is growing sentiment in the medical community regarding the re-emergence of the "generalist" general surgeon.⁶ Every commission studying rural health care delivery has identified this issue, and in 1991 the Royal College of Physicians and Surgeons of Canada recommended that residency training programs be tailored for residents planning to practise in smaller communities.⁷

Despite these ideologic changes it is unclear how well the academic general surgical community will or can respond to this need. General surgeons are an aging group, and the number of general surgeons in active practice has been declining steadily over the past 15 years.⁸ In this era of increasing surgical subspecialization⁹ the issue of training "generalist" general surgeons is controversial.^{10,11} Moreover, the disincentives to rural surgical practice raise doubts whether enough general surgeons can

be trained to meet the surgical needs of rural communities. Thus, communities that have relied on traditional "generalist" general surgeons to perform common general, plastic, gynecologic, orthopedic and obstetric surgical procedures are having increasing difficulty attracting newly trained general surgeons to meet their needs.¹²

Compared with their urban counterparts, rural GPs are much more involved in hospital work, providing general care, emergency services and obstetric deliveries in addition to their office practices.¹³ GPs with additional training in anesthesia also often provide anesthesia services.¹⁴ However, the role of the GP in providing surgical services is not well defined. GPs have in general been excluded from the rural-surgery discussion, even though they have always provided some aspect of surgical care. This is understandable given the differing roles of primary care physicians in the urban setting and the fact that medical policymakers are primarily urban based. In this study we have attempted to characterize the present role of GPs in providing surgical and anesthesia services in rural western Canada.

METHODS

A questionnaire was sent to 148 administrators of small hospitals in British Columbia, Alberta, the Yukon Territory and the Northwest Territories that were listed in the 1992 *Canadian Hospital Directory*.¹⁵ We excluded all hospitals with more than 50 acute care beds and those that served populations (community and surrounding area) larger than 15 000. We chose these exclusion criteria to focus on hospitals where GPs would likely have a pronounced role and to avoid the inclusion of regional hospitals.

The administrators were sent a four-page questionnaire with seven main questions addressing the hospital's demographic characteristics, the type of physicians providing surgical services, the type providing anesthesia services, the length and location of GPs' surgical and anesthesia training, the surgical procedures performed by GPs and the administrators' level of satisfaction with the delivery of surgical care at their hospital. For the last item, they were asked to elaborate on their answer. (A copy of the questionnaire is available from the corresponding author upon request.)

A first mailing was carried out in November 1993. A second mailing to initial nonresponders was done in March 1994 to maximize the response rate. Any subse-

quent nonresponders were telephoned in May 1994 and asked a limited number of questions: their hospital's demographic characteristics, the type of physicians providing surgical services and their level of satisfaction with the delivery of surgical services at their hospital.

The responses to the questionnaires were collated using EpiInfo software (version 5.0, USD Inc., Stone Mountain, Ga.) and analysed by examining univariate frequencies and distributions. Standard unpaired *t*-tests were used to compare hospital characteristics, and the χ^2 test was used to compare types of service providers.

RESULTS

Of the 148 administrators 121 (82%) completed and returned the questionnaire. Of these, 101 met the inclusion criteria. Table 1 illustrates the demographic characteristics of the hospitals. Just over half (55% [56/101]) of the hospitals provided surgical services. Compared with the hospitals that did not provide surgical services, these hospitals had more acute care beds, more physicians on staff, served a larger population and were further from the closest regional or tertiary care centre. All but the differences in distance were statistically significant ($p < 0.05$).

For the surgical services, there were four types of providers at the 56 hospitals: 14 full-time general surgeons (specialists who confined themselves solely to a specialty practice), 35 part-time general surgeons (fully trained specialists who also maintained a general practice), 70 GPs with limited surgical training and 68 GPs with no additional surgical training. Eleven (20%) of the 56 hospitals had full-time general surgeons, five of which had itinerant surgeons travelling from nearby regional centres. Thirty (54%) had part-time general surgeons, one of which had itinerant surgeons travelling from a nearby centre. GPs provided surgical services at 45 (80%) of the 56 hospitals; GPs with limited surgical training did so at 33 (59%) of the hospitals. Over one quarter (27% [15/56]) of the hospitals relied completely on GPs with limited surgical training to provide their surgical services. The distribution of providers of surgical services is summarized in Table 2.

For anesthesia services, there were three types of

providers: 11 full-time anesthetists (fully trained specialists confining themselves solely to a specialty practice), 15 part-time anesthetists (fully trained specialists who also maintained a general practice) and 95 GPs with limited formal training in anesthesia. There were no GPs without additional anesthesia training who were providing anesthesia services. Of the 56 hospitals 7 (13%) had full-time anesthetists, 5 of which had ones who travelled from nearby regional centres. Thirteen (23%) had part-time anesthetists, two of which had ones who travelled from nearby centres. GPs provided anesthesia services at 45 (80%) of the 56 hospitals. Almost two thirds (64% [36/56]) of the hospitals relied completely on GPs with additional anesthesia training to provide anesthesia services. The distribution of providers of anesthesia services is summarized in Table 2.

The data regarding the location and length of additional specialty training for the GPs is summarized in Table 3. GPs with limited surgical training had on aver-

Table 2: Type of physicians providing surgical and anesthesia services in hospitals in rural western Canada

Service; type of physician	No. (and %) of hospitals <i>n</i> = 56
Surgical*	
GS + GS/GP + GP	1 (2)
GS + GP	8 (14)
GS/GP + GP	20 (36)
GP alone	16 (29)
GS or GS/GP alone	11 (20)
Anesthesia†	
FTA + A/GP + GP	0 (0)
FTA + GP	5 (9)
A/GP + GP	4 (7)
GP alone	36 (64)
FTA or A/GP alone	11 (20)

*GS = full-time general surgeon, GS/GP = part-time general surgeon with a general practice, GP = general practitioner with or without additional surgical training.

†FTA = full-time anesthetist, A/GP = part-time anesthetist with a general practice, GP = general practitioner with additional anesthesia training.

Table 1: Characteristics of hospitals in rural western Canada

Characteristic	Surgical services provided <i>n</i> = 56	No surgical services provided <i>n</i> = 45	<i>p</i> value*
Mean no. (and range) of acute care beds	32 (15–50)	17 (3–42)	< 0.05
Mean no. (and range) of physicians	6.4 (2–15)	3.1 (1–12)	< 0.05
Size of community served, mean no. (and range)	8 280 (2 500–15 000)	3 755 (375–12 000)	< 0.05
Mean referral distance, km	216 (15–1 800)	147 (37–500)	NS

*NS = not significant.

age 17 months of additional training, primarily in Canada. Those with limited anesthesia training had on average 11 months of additional training, also primarily in Canada.

Table 4 illustrates the procedures performed by both GPs with limited additional training and those without additional training. In general, procedures performed depended on the extent of the GPs' additional training and the presence of better trained practitioners in the community. For instance, a small number of GPs who practised in more remote settings and had substantial additional training were said to perform such procedures as pelvic laparotomy for ectopic pregnancy, cholecystectomy, ankle pinning and carpal tunnel repair.

Almost all (97% [98/101]) of the administrators answered the question "Do you feel that your community's basic surgical needs are adequately served by your complement of physicians?" Just over three quarters (76% [74/98]) answered Yes. Of these, 47 were at hospitals that provided surgical services and either felt that they had an adequate physician supply or made use of itinerant surgeons. Although the remaining 27 administrators answered Yes, their hospital did not provide the surgical services because it was within 75 km of a referral centre (reported by 13) or had too few acute care beds or physicians (i.e., fewer than 10 beds and fewer than three physicians) (reported by 9); the remaining 5 did not give an explanation.

Twenty-four (24%) of the 98 administrators felt that their community's basic surgical needs were not adequately served by their complement of physicians and provided comments explaining their reasons for this view. At 8 hospitals surgical services were provided but the number of physicians was inadequate, and at 16 hospitals surgical services were not provided because of inadequate funding and low numbers of physicians and support staff.

Table 3: Location and length of GPs' surgical and anesthesia training

Location of training	Type of training; no. (and %) of GPs*	
	Surgical <i>n</i> = 63	Anesthesia <i>n</i> = 83
Canada	29 (46)	52 (63)
South Africa	20 (32)	18 (22)
United Kingdom	9 (14)	11 (13)
Australia or New Zealand	3 (5)	2 (2)
Other	2 (3)	0 (0)
Mean length of training (and range), mo	17 (2-48)	11 (1-36)

*Unless otherwise stated. Information was not provided for 7 GPs with surgical training and 12 GPs with anesthesia training.

The telephone survey of 23 (85%) of the 27 nonresponders revealed that 22 were at hospitals that met our inclusion criterion. Most (91% [20/22]) of the administrators felt that their community's surgical needs were being adequately met by their complement of physicians. There were no differences in characteristics between the hospitals for which a questionnaire was returned by mail and those for which responses were obtained by telephone (Table 5). Moreover, the data from the telephone survey supported the findings of the role of GPs in providing surgical services.

DISCUSSION

Our data suggest that GPs play a major role in providing surgical services in rural western Canadian hospitals. They provided such services at 60 (83%) of the 72 hospitals offering surgical services. Moreover, 43 (60%) of the 72 hospitals had GPs with limited additional training who were performing emergency cesarean sections. The anesthesia services in these rural hospitals were provided primarily by GPs with limited formal training in anesthesia. These findings suggest that the rural surgery model should be expanded to include designated GPs with limited additional surgical training.

This study has certain limitations. First, it may not be possible to extrapolate the data to describe the role of

Table 4: Procedures performed by GPs at hospitals providing surgical services

Procedure	No. (and %) of hospitals <i>n</i> = 56
General surgery	
Appendectomy	29 (52)
Incision and drainage of ischiorectal abscess	28 (50)
Repair of umbilical hernia	25 (45)
Repair of inguinal hernia	24 (43)
Excisional biopsy of breast	17 (30)
Obstetrics-gynecology	
Dilation and curettage	44 (79)
Tubal ligation	37 (66)
Cesarean section	31 (55)
Administration of epidural anesthetic	24 (43)
Miscellaneous	
Vasectomy	40 (71)
Reduction of closed fracture	40 (71)
Tonsillectomy	25 (45)
Minor skin grafting	24 (43)
Repair of extensor tendon	20 (36)

GPs providing surgical services on a national level. Certainly this study would have had more power if it had not been limited to western Canada. None the less, we chose this region because of its geographic characteristics. The combination of difficult topography, potential for inclement weather and distances between relatively small communities lends itself to an expanded role for local GPs. This situation may also exist in Canada's large central provinces, but not necessarily in the smaller provinces, where distances between larger centres are less prohibitive.

Second, we may have excluded some rural hospitals by making our exclusion criteria too stringent. We chose these criteria to focus on the role of GPs providing more advanced surgical services such as cesarean section or appendectomy. Certainly, GPs may provide some surgical services in larger hospitals (those with 50 to 70 beds); however, with the increased likelihood of surgical specialists practising there, this role is likely to be much more limited for GPs. In addition, we felt that these larger hospitals were much more likely to represent regional or urban community hospitals, the inclusion of which would have diluted the data.

Finally, we did not address the quantity of procedures performed or the quality of the care provided. One could argue that the GP who performs one appendectomy or one cesarean section per year has a very limited role as a provider of surgical services and probably should not be performing these procedures under any circumstances. Although we did not address these questions directly, the administrators' opinions regarding their satisfaction with the adequacy of surgical services provided by their hospitals indirectly suggest that GPs performing surgical procedures and anesthesia services are meeting a reasonable standard of care.

Despite these limitations, our findings do have some currency in the discussion regarding postgraduate medical education in Canada. The physician resource trends

of the 1990s will substantially affect the ability of rural communities to continue to rely on GPs to provide their surgical services. New immigration restrictions will adversely affect the supply of foreign-trained GPs with limited surgical training. Furthermore, the elimination of the rotating internship and the new relation between board certification and licensure will make it more difficult, if not impossible, for Canadian medical graduates to obtain limited specialty training. Therefore, it may be reasonable to establish a limited number of surgical fellowships for designated GPs who practise in rural settings. These fellowships could be similar in concept and scope to the established anesthesia and emergency medicine fellowships currently available for GPs.

The difficulties in providing adequate health care to remote rural communities are not unique to Canada. In Australia the shortage of physicians in rural areas and the problems of health care delivery in nonurban settings have also been documented, and a National Rural Health Strategy has been developed.¹⁶ One part of this strategy is the Royal Australian College of General Practitioners' recent creation of a Faculty of Rural Medicine at Monash University. This faculty offers a new 4-year training program that allows trainees the option of developing the special skills in obstetrics, anesthesia and surgery that are required in rural practice.¹⁷ Certainly such a model is relevant to our situation in Canada.

CONCLUSION

GPs with limited surgical training play a significant role in providing surgical services in rural western Canadian hospitals. However, the linking of licensure to formal certification and the trend toward limiting the number of foreign-trained physicians may make it difficult or impossible to maintain this present situation. Consequently, there is a need to create surgical fellowships for GPs who intend to practise in rural settings.

Table 5: Characteristics of hospitals for which the questionnaire was completed (responders) or not completed (nonresponders)*

Characteristic	Responders <i>n</i> = 101	Nonresponders <i>n</i> = 22
Mean no. (and range) of acute care beds	25 (3–50)	30 (8–50)
Mean no. (and range) of physicians	5 (1–15)	6 (2–17)
Size of community served, mean no. (and range)	6 300 (375–15 000)	7 327 (2 500–15 000)
Mean referral distance (and range), km	185 (15–1 800)	114 (15–400)
Surgical services provided, no. (and %) of hospitals	56 (55)	16 (73)
Surgical services provided by GPs, no. (and %) of hospitals	45/56 (80)	15/16 (94)
Cesarean sections provided, no. (and %) of hospitals	31/56 (55)	12/16 (75)

*Information from nonresponding hospitals was obtained by telephone.

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